

What we claim is

1. A hybrid flow metering valve comprising:

a) A body having an inner tubular space along the main axis of the body thereof and having said tubular space divided to at least two substantially different portions - first one substantially threaded designated as leading portion and second one which can be internally threaded or smooth designated as regulating portion;

At least two relatively interchangeable ports - one inlet port and one outlet port in fluid communication with said regulating portion of said tubular space and being separated longitudinally by internally threaded or smooth cylindrical surface;

b) A cylindrical stem having at least two substantially different portions longitudinally on its surface: first one - substantially threaded with the same pitch as said body and congruently engaged with said body threaded surface thereof designated as leading portion and second one which can be smooth or threaded proliferating longitudinally into said second portion of the body between said inlet and outlet ports designated as regulating portion;

c) Said leading portion of said stem having zero backlash fit with congruently engaged body leading portion thereof defining leading thread capable to move longitudinally said stem into said regulating body portion upon rotation of said stem and said regulating portion of the stem being threaded or smooth is engaged threadedly or slidably with corresponding said regulating portion of said tubular space;

d) At least one of the mutually engaged said regulating portions of the tubular space and said regulating portion of said stem is substantially threaded;

e) At least one of the said substantially threaded surfaces has its thread substantially truncated with tapering truncation - for the internal thread from the major diameter of internal thread to the diameter equal or lesser than minor diameter of internal thread and for the external thread from the major diameter of external thread to diameter equal or lesser than minor diameter of external thread;

f) Said mutually engaged regulating body portion and said regulating stem portion defining at least one spiral backlash or groove along said tapering truncated thread and said backlash or groove being with tapering cross-section;

g) Said tapering cross-section defining tapering flow passage between said inlet and said outlet ports and said cross-section of said tapering flow passage being a function of the length of said stem engaged between said two ports therefore function of rotation of said first portion of said stem into said first portion of said tubular space;

h) Said stem having conical or ogival front part adjacent to said truncated threaded portion and said front part extended beyond said outlet port when said stem fills completely said space between said inlet and outlet ports and can seal hermetically corresponding sit defined into said tubular space;

i) Said stem having a means for rotation mounted on extended out of said body part of said stem, so that by rotation of said means said stem will axially move into the space between said inlet and said outlet ports, whereby providing full range of flow regulation from “shut-off” position when said stem completely fills said space, then very “low flow” regulating position along the backlash capillary channel when said stem is partially removed from said space, then “moderate flow” when said stem is inserted only partially into said inlet port by said front portion and “full flow” position when said stem with said front portion is removed completely and said space is empty.

2. A hybrid flow metering valve as set in claim 1 wherein said stem leading portion is separated from said regulating portion by smooth cylindrical portion which is slidably fitted into corresponding smooth bore inner portion of said body whereby to provide fluid tightness of the assembly between said leading portions of said stem and said body and said regulating portions of the body and stem.

3. A hybrid flow metering valve as set in claim 2 wherein said smooth cylindrical portion of said stem has grooves for o-rings whereby to insulate better said leading from said regulating portions.

4. A hybrid flow metering valve as set in claim 1 wherein said body of the valve is composed from more than one coaxial mounted portions whereby to provide easy assembly, accessibility and maintenance.

5. A hybrid flow metering valve as set in claim 1 wherein said inlet port and said outlet port can reverse their function whereby to provide regulation of the flow through the valve independent of the initial direction of the flow.

6. A hybrid flow metering valve as set in claim 1 wherein said stem has a portion extended out of said body assembly designated to be connected with means for regulation further comprising:

a) Handle for rotation of said stem;

b) Micrometric scale for measuring the degree of that rotation and therefore degree of the insertion of said regulating portion of the stem into said regulating portion of said tubular space.

7. A hybrid flow metering valve as set in claim 1 wherein the diameter of said inlet and outlet ports is substantially the same or smaller compare to the diameter of said inner tubular space and more particularly to said regulating portion of the tubular space thereof.

8. A hybrid flow metering valve as set in claim 7 wherein said conical or ogival front portion of said stem completely seals said inlet/outlet port when being axially pressed to corresponding congruently shaped sit adjacent said inlet/outlet port.

9. A hybrid flow metering valve as set in claim 7 wherein said stem is engaged threadely with body insert made from material with predetermined low coefficient of friction such as self-lubricating plastics.